

SYNOPTICAL STUDY OF *RHUS VIRENS* (ANACARDIACEAE) AND CLOSELY RELATED TAXA

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ABSTRACT

A taxonomic study of *Rhus virens* and closely related taxa is rendered. Previous workers have lumped or variously split this complex, which includes *R. virens*, *R. choriophylla*, *R. andrieuxii*, *R. pachyrrhachis*, and *R. schiedeana*. I have reduced *R. choriophylla* to varietal rank under *R. virens*; additionally, a southern element of the latter from Puebla and Oaxaca is proposed as a new taxon, *R. virens* var. *australis* B.L. Turner, var. nov. *Rhus pachyrrhachis* and *R. schiedeana* are maintained, but populational elements of the latter from northeastern México have been segregated as *R. tamaulipana* B.L. Turner, spec. nov. The morphological relationships of these various taxa are briefly touched upon, including a key for identification purposes and figures showing their distribution.

KEY WORDS: Anacardiaceae, *Rhus*, México, U.S.A.

Attempts to provide accurate names for members of the *Rhus virens* A. Gray complex in Texas and closely adjacent México provided impetus for the present paper. *Rhus virens* is an abundant shrub in southern Texas and throughout much of northern México, easily recognized by its shrubby habit and relatively thick evergreen imparipinnate leaves. Barkley (1937) treated the species as belonging to the sect. *Pseudoschmaltzia*, *Rhus virens* being its type. His treatment of this section, which included twelve species, was based upon relatively few specimens and little or no field work. The contribution here includes five species of this section: *R. virens*, *R. choriophylla* Woot. & Standl., *R. andrieuxii* Engler ex DC., *R. pachyrrhachis* Hemsl., and *R. schiedeana* Schlecht. Numerous specimens of these taxa assembled since Barkley's treatment, especially at LL, TEX, now permit a more refined treatment of this complex.

The following key will distinguish among the *Rhus virens* phalanx, and brief comments upon their relationships and synonymies follow.

KEY TO *RHUS VIRENS* AND VERY CLOSELY RELATED TAXA

1. Terminal leaflets (excluding petiolules) of larger leaves mostly (3-)4-7 cm long; Hidalgo, Querétaro, Veracruz, Guerrero, Chiapas, and Guatemala. 1. *R. schiedeana*
1. Terminal leaflets (excluding petiolules) of larger leaves mostly 3-4 cm long; Sonora and closely adjacent U.S.A., eastwards to Tamaulipas and southern Texas, southwards along the Sierra Madre Oriental to Oaxaca, México.
 2. Vestiture of stems and leaves composed of spreading hairs about 0.5 mm high; mostly Gulf slopes of Sierra Madre Oriental (Tamaulipas, San Luis Potosí, and Querétaro). 2. *R. pachyrrhachis*
 2. Vestiture of stems and leaves essentially absent or composed of short appressed or spreading hairs 0.25 mm high or less.
 3. Larger leaves with mostly 11-13 leaflets; pubescence of minute arcuate, upwardly appressed, hairs; southern Nuevo León, Tamaulipas, San Luis Potosí?, and Hidalgo. 3. *R. tamaulipana*
 3. Larger leaves with mostly 3-9 leaflets; pubescence variable or nearly absent, but not as described in the above. 4. *R. virens*
 4. Vestiture of stems and leaves composed of spreading short hairs mostly ca. 0.2 mm high; Texas, New Mexico, and north central México. 4a. var. *virens*
 4. Vestiture of stems and leaves essentially absent or much shorter than 0.2 mm high; widespread.
 5. Larger leaves with lateral leaflets mostly 2-3 cm long; southern México (Puebla, Oaxaca). 4c. var. *australis*
 5. Larger leaves with lateral leaflets mostly 3-4 cm long; north central México. 4b. var. *choriophylla*

1. *RHUS SCHIEDEANA* Schlecht., Linnaea 16:480. 1842.

Two sheets are cited in the protologue for this taxon, both apparently from the state of Hidalgo: *Schiede s.n.*, "Barranca de Santa Maria inter San Jose del Oro et Ixmiquilpan"; and *C. Ehrenberg s.n.*, "Ad Reglam a sept. ad Nov." A lectotype needs to be selected from among these, but the very complete description leaves little doubt as to the application of the name concerned.

My concept of this taxon is about the same as that of Barkley (1937), both of us placing emphasis on the large terminal leaflets which serve to distinguish it from the smaller leafleted, largely allopatric, *Rhus pachyrrhachis*. These two taxa have similar vestitures (long spreading hairs ca. 0.5 mm high) and relatively large leaflets, which serve to distinguish them from *R. virens* and *R. tamaulipana*.

David Young (by annotation) has designated at least one collection of *Rhus schiedeana* from Querétaro, México (*Johnston 6135a* [TEX]) as a possible hybrid or hybrid derivative from *R. pachyrrhachis*, but I think the plant concerned is fairly typical *R. schiediana*. As indicated in Figures 1 and 2, the two taxa probably occur in

close proximity in this region and the occasional hybrid (if not introgressant) is to be expected.

I have examined and annotated 42 or more sheets (LL, TEX) of *Rhus schiedeana* and these have served in my construction of Figure 1. The isolated collection from the state of Guerrero was annotated by Young (TEX) as a distinct subspecies of *R. schiedeana*, but this is not obvious to me from the single collection concerned.

2. *RHUS PACHYRRHACHIS* Hemsl., Biol. Centr. Amer. Bot. 1:218. 1880. TYPE: MEXICO. San Luis Potosí: 22° northern latitude, 6000-8000 ft., 1878-1879, *Parry & Palmer 125* (HOLOTYPE: K; Isotypes: F, GH, MO, PH, according to Barkley, 1937).

My concept of this taxon is about the same as that of Barkley (1937) and, as perceived through annotation (LL, TEX), that of Young. As noted in the above account of *Rhus schiedeana*, *R. pachyrrhachis* is closely related to the latter and perhaps hybridizes with it upon occasion. The two are readily distinguished, for the most part, by leaflet size, as noted in my key.

Young annotated at least a few sheets of *Rhus pachyrrhachis* as possible hybrids or hybrid derivatives from *R. virens* (e.g., *Taylor 71, 121* [TEX], both from near Nuevo León, Mpio. Galeana, Hacienda Pabillo), but I take these to be but forms of fairly typical *R. pachyrrhachis* having somewhat smaller leaves.

A single sterile collection from Coahuila (*Villareal 3158* [TEX]) differs significantly from the numerous other collections examined and mapped (Figure 2) in possessing an attractive markedly purplish vestiture on its new-growth foliage. The population from which this plant was obtained deserves closer scrutiny, at least for its potential as a xeriscape plant in the desert regions of Texas and México.

3. *RHUS TAMAULIPANA* B.L. Turner, *spec. nov.* TYPE: MEXICO. Tamaulipas: "8 mi S of Palmillas" along the Cd. Victoria—San Luis Potosí highway, "ravine bottom on E side of highway," 20 Jul 1985, *S. Ginsbarg 132* (with A. Whittemore). (HOLOTYPE: TEX!).

Similis *R. virenti* Lindh. *ex* A. Gray sed foliis majoribus pluribusque, 9-11 (vice 5-7), foliolis apicaliter acutis, et indumento pilorum minute appressorum.

Shrubs 1-2 m. high. Stems 3-8 mm across, when young the vestiture densely pubescent with mostly upturned or appressed hairs 0.2 mm high or less. Larger leaves 11-14 cm long; lateral leaflets, mostly 5-6 pairs, ovate to lanceolate, 2.5-3.5(-4.0) cm long, 1.0-1.7 cm wide, glabrous above and below except for a sparse pubescence along the margins and midrib, the apices decidedly acute. Inflorescences axillary, about 1/2 as long as the subtending leaves, their branches minutely appressed-pubescent, stiffly ascending at first but divergent with age. Bracts broadly

ovate, 0.5-1.0 mm long. Calyces glabrous, scarious, ca. 1.5 mm high. Petals 5, white, ca. 2.5 mm long, 1.2-1.4 mm wide. Stamens ca. 1.4 mm long, the anthers ca. 0.5 mm long. Fruits globose, white to rose-colored, 6-7 mm across, evenly pubescent throughout with spreading hairs ca. 0.5 mm long, below these a surface layer of minute ovoid sessile glands.

ADDITIONAL SPECIMENS EXAMINED: MEXICO. Nuevo León: Mpio. Zaragoza, Cerro La Peña, NE exposure, 2600-2700 m, 3 Jul 1988, *Patterson 5817*. Tamaulipas: 1 km S of Carabanchel, 5800-5900 ft, 30 Jul 1965, *Gilbert 89* (TEX); Mpio. Villa de Casas, Sierra Tamaulipas, 900 m, 22 Sep 1965, *Martínez F-1960* (TEX); Gomez Farías, Rancho del Cielo, 22 Jul 1968, *Richardson 736* (TEX); same locality, 25 Jul 1968, *Richardson 819* (TEX); 29 Aug 1968, *Richardson 850* (TEX); 26 Nov 1968, *Richardson 1045* (TEX); Rancho del Cielo, 4 Nov 1964, *Webster 104* (TEX).

Barkley (1937; and by annotation) included material of this taxon in his broad concept of *Rhus andrieuxii* Engler ex DC., as noted in my discussion under *R. virens*. Young, to judge from annotations, referred four of the above-cited sheets in his concept of an as-yet undescribed subspecies of *Rhus virens*.

Rhus tamaulipana, as indicated in the diagnosis, differs markedly from *R. virens* (all varieties) in having larger, more apically acute leaves with more numerous leaflets (4-5 pairs of laterals, vs. 2-3[-4] pairs). Additionally, the vestiture is composed of fine minutely appressed hairs. No intergrades between *R. tamaulipana* and *R. virens* were encountered in this study, the former occurring on the more mesic eastern slopes of the Sierra Madre Oriental, the latter more to the interior in more xeric sites.

4. *RHUS VIRENS* Lindh. ex A. Gray

My study of this very common species suggests that three morphological varieties make up the taxon, as indicated in my key. Two of these, var. *virens* and var. *choriophylla*, are essentially allopatric and intergrade, at least over parts of their distribution as shown in Figure 3. I treat these as belonging to the subsp. *virens* -- the additional morphogeographical element, var. *australis*, is relatively well-marked and because of its isolated geographical position, is treated as a monotypic subspecies.

4a. *RHUS VIRENS* Lindh. ex A. Gray var. *VIRENS*

Rhus virens Lindh. ex A. Gray, Bost. J. Nat. Hist. 6:159. 1850. TYPE: A. Gray in the protologue of *R. virens* cites a number of collections; the manuscript name was based upon several Lindheimer collections from the vicinity of New Braunfels, Comal Co., Texas. From among these a lectotype must be selected.

Rhus sempervirens Scheele, Linnaea 23:566. 1850. *Toxicodendron sempervirens* (Scheele) Kuntze, Rev. Gen. Pl. 152. 1891. *Schmaltzia virens* (Scheele) Small, Fl. Southeast. U.S. 729. 1903. TYPE: U.S.A. Texas: Comal Co., vicinity of New Braunfels, 1845, *F. von Roemer s.n.* (type material not located).



Figure 1. Distribution of *Rhus schiedeana* (open circles) and *R. tamaulipana* (closed circles).



Figure 2. Distribution of *Rhus pachyrrhachis* (open circles).

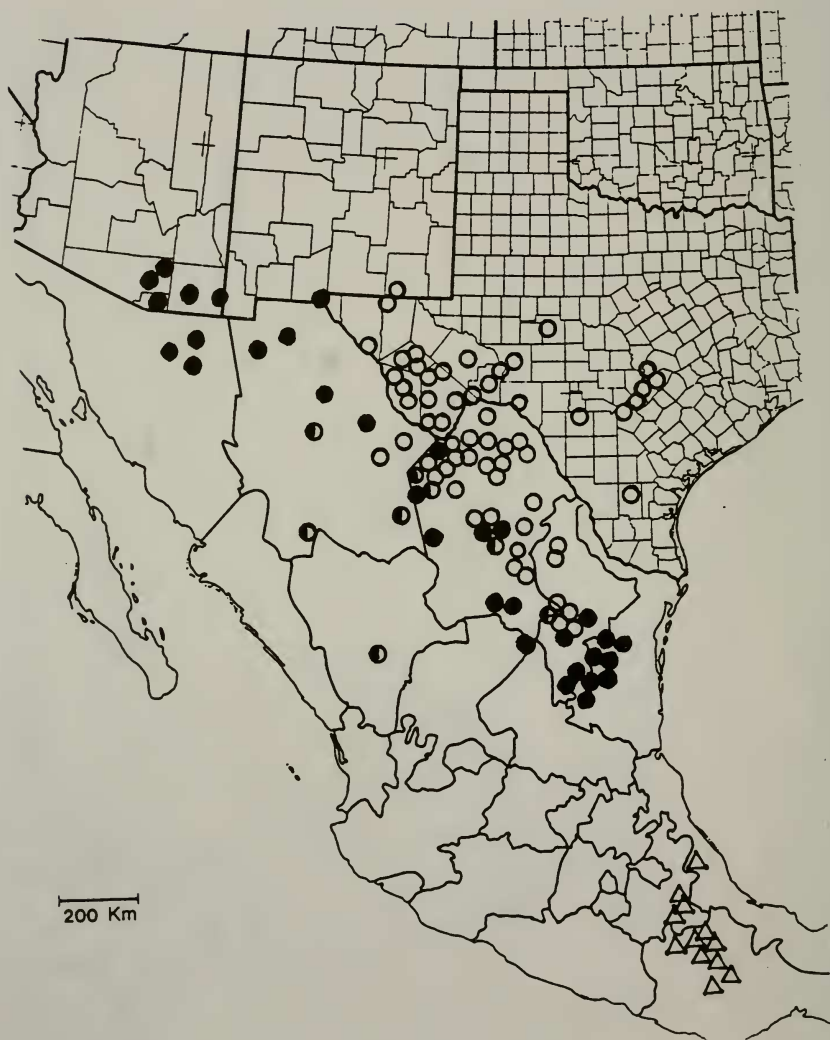


Figure 3. Distribution of *Rhus virens*: var. *virens* (open circles); var. *choriophylla* (closed circles); intermediates between the foregoing (half-closed circles); var. *australis* (triangles).

My concept of this taxon is about the same as that of Barkley (1937). Both *Rhus virens* and *R. sempervirens* are typified by material collected in the vicinity of New Braunfels, Texas, the former name having priority by a few months.

The var. *virens*, in my account, is largely distinguished by vestiture, this composed of spreading short-pilose hairs ca. 0.2 mm high. As shown in Figure 3, occasional intermediates between var. *virens* and var. *choriophylla* occur in north central México where their populations seemingly intergrade.

4b. *RHUS VIRENS* Lindh. ex A. Gray var. *CHORIOPHYLLA* (Woot. & Standl.) B.L. Turner, var. nov. Based upon *Rhus choriophylla* Woot. & Standl., Contr. U.S. Natl. Herb. 16:146. 1913. TYPE: U.S.A. New Mexico: Eddy Co. (?), SW corner of New Mexico in Guadalupe Canyon, 16 Aug 1892, E.A. Mearns 699 (HOLOTYPE: US, not examined).

As indicated in Figure 3, this is a western phase of *Rhus virens*, largely distinguished by its near-glabrosity. Some workers have suggested that leaflet size and inflorescence position might serve to distinguish between the two varietal taxa (e.g., Correll & Johnston 1970), but this is not evident to me after examination of 200 or more specimens from over a broad area.

Barkley (1937) also used pubescence to distinguish between these two taxa, noting var. *choriophylla* (which he treated as specifically distinct) to have leaflets glabrous or nearly so. Young, to judge from annotations (TEX), contemplated treating *R. choriophylla* as a subspecies of *R. virens*. His concept of subspecies is presumably the same as my varietal concept. I use the term subspecies to cluster varieties and/or to designate those varietal elements which are well differentiated and nearly at the species level.

4c. *RHUS VIRENS* Lindh. ex A. Gray var. *AUSTRALIS* B.L. Turner, var. nov. TYPE: MEXICO. Oaxaca: Mpio. de Tepelmeme, 1 km al O de El Rodeo, 2200 m, "Matorral esclerofilo . . .," 8 Jul 1986, Abisai G. Mendosa et al. 2453 (HOLOTYPE: TEX).

Similis *R. virens* Lindh. ex A. Gray subsp. *virens* sed foliolis parvioribus pluribusque plerumque 7-9 (vice 5-7), apicibus anguste obtusis aut acutis (vice late obtusorum aut rotundorum).

ADDITIONAL SPECIMENS EXAMINED: MEXICO. Puebla: Tenorio L. 5137 (TEX); Tenorio 7314 (TEX); Valiente B. 783 (TEX); Webster 20051 (TEX). Oaxaca: Chazaro, et al. 7065 (TEX); Rzedowski 19190 (TEX).

If treated at the species level, the name *Rhus andrieuxii* possibly applies to this taxon. The latter, as indicated in its protologue, is typified by several collections: *Andrieux* 271, presumably from the states of Puebla or Oaxaca; *Karwinski* s.n., without locality; and *Liebman* s.n., collected at "Plantavillo." Clearly a lectotype from among these must be selected.

Rhus andrieuxii, in its protologue is described as having leaves with 5-7 leaflets, the leaflets 2-3 cm long, 1.5-2.5 cm wide. Barkley (1937), while accepting *R. andrieuxii* as a valid species, broadened the description of the species so as to include elements with more numerous leaflets (9-17), including material that I recognize here as *R. tamaulipana*. Standley (1923) accepted *R. andrieuxii* as distinct but describes the leaves as having 5 or 7 leaflets, as given in the type description.

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LITERATURE CITED

- Correll, D.C. & M.C. Johnson. 1970. *Manual of the Vascular Flora of Texas*. Texas Research Foundation, Renner, Texas.
- Barkley, F. 1937. A monographic study of *Rhus* Ann. Missouri Bot. Gard. 24:265-499.
- Standley, P.C. 1923. *Rhus* in *Trees and Shrubs of Mexico*. Contr. U.S. Natl. Herb. 23:665-671.